

Claims

- [c1] 1. An assembly of RF coils for bilateral imaging of a first and a second breast of the same person, the assembly comprising:
- a first pair of coils comprising a first coil juxtaposed and underlapping a second coil, thereby defining juxtaposed edges of the first and second coils;
 - a second pair of coils comprising a third coil juxtaposed and underlapping a fourth coil, thereby defining juxtaposed edges of the third and fourth coils;
 - the first coil having a first opening for receiving the first breast;
 - the second coil having a second opening for receiving the second breast;
 - the third coil substantially opposing the first coil, defining therebetween a first region for receiving the first breast; and
 - the fourth coil substantially opposing the second coil, defining therebetween a second region for receiving the second breast.
- [c2] 2. The assembly of Claim 1, wherein:
- the juxtaposed edges of the first and second coils op-

pose the juxtaposed edges of the third and fourth coils, respectively.

- [c3] 3.The assembly of Claim 1, wherein:
the distance between the juxtaposed edges of the first and second coils define a first underlap dimension; and
the distance between the juxtaposed edges of the third and fourth coils define a second underlap dimension, the second underlap dimension being equal to or greater than the first underlap dimension.
- [c4] 4.The assembly of Claim 3, wherein:
the second underlap dimension is about equal to the first underlap dimension.
- [c5] 5.The assembly of Claim 1, wherein:
the axis of the third coil is disposed substantially parallel to the axis of the first coil; and
the axis of the fourth coil is disposed substantially parallel to the axis of the second coil.
- [c6] 6.The assembly of Claim 1, wherein:
the first coil has an inside diameter that is equal to or larger than the inside diameter of the third coil; and
the second coil has an inside diameter that is equal to or larger than the inside diameter of the fourth coil.
- [c7] 7.The assembly of Claim 6, wherein:

the first and second coils have an inside diameter equal to or greater than about 6.75-inches; and
the third and fourth coils have an inside diameter equal to or greater than about 6.25-inches.

[c8] 8.The assembly of Claim 7, wherein:
the first and second coils have an inside diameter equal to about 7.75-inches; and
the third and fourth coils have an inside diameter equal about 7.25-inches.

[c9] 9.The assembly of Claim 3, wherein:
the first underlap dimension is equal to or greater than about 0.25-inches and equal to or less than about 2-inches.

[c10] 10.The assembly of Claim 9, wherein:
the first underlap dimension is equal to or greater than about 1-inch and equal to or less than about 1.5-inches.

[c11] 11.The assembly of Claim 10, wherein:
the first underlap dimension is equal to about 1.25-inches.

[c12] 12.The assembly of Claim 1, wherein:
the first pair of coils have windings that are non-planar.

[c13] 13.The assembly of Claim 1, wherein:

the third and fourth coils oppose the first and second coils, respectively, by a defined distance such that the first and second breasts, under the influence of gravity, extend through the first and second openings of the first and second coils toward the third and fourth coils without extending beyond the third and fourth coils.

[c14] 14.The assembly of Claim 13, wherein:
the defined distance is adjustable.

[c15] 15.The assembly of Claim 1, wherein:
the first pair of coils is configured to be operational in the absence of the second pair of coils being operational.

[c16] 16.The assembly of Claim 1, wherein:
the first, second, third and fourth coils are each configured to be operational independent of each other.

[c17] 17.The assembly of Claim 1, further comprising:
a fifth, a sixth and a seventh coil, each having axes arranged substantially perpendicular to the axes of the first, second, third and fourth coils;
wherein the fifth coil is disposed superior to the first region, the sixth coil is disposed inferior to the first and second regions, and the seventh coil is disposed superior to the second region.

- [c18] 18.The assembly of Claim 17, wherein:
the fifth and sixth coils are each disposed underlapped with respect to the first and third coils; and
the sixth and seventh coils are each disposed underlapped with respect to the second and fourth coils.
- [c19] 19.The assembly of Claim 18, further comprising:
an eighth coil oriented similar to and proximate the sixth coil, the sixth coil disposed proximate the first region, the eighth coil disposed proximate the second region; wherein the eighth coil is disposed underlapped with respect to the second and fourth coils.
- [c20] 20.The assembly of Claim 1, further comprising:
an open region between the first and second pairs of coils to allow access therebetween to the first and second regions.
- [c21] 21.An apparatus for bilateral imaging of a first and a second breast of the same person, the apparatus comprising:
a first coil juxtaposed and underlapping a second coil by a first underlap dimension;
a third coil juxtaposed and underlapping a fourth coil by a second underlap dimension;
the first coil having a first opening for receiving the first

breast;
the second coil having a second opening for receiving the second breast;
the third coil substantially opposing the first coil, defining therebetween a first region for receiving the first breast; and
the fourth coil substantially opposing the second coil, defining therebetween a second region for receiving the second breast;
wherein the second underlap dimension is equal to or greater than the first underlap dimension;
wherein the first coil has an inside diameter that is equal to or larger than the inside diameter of the third coil;
and
wherein the second coil has an inside diameter that is equal to or larger than the inside diameter of the fourth coil.

[c22] 22. The apparatus of Claim 21, wherein the third and fourth coils oppose the first and second coils, respectively, by a defined distance such that the first and second breasts, under the influence of gravity, extend through the first and second openings of the first and second coils toward the third and fourth coils without extending beyond the third and fourth coils.

- [c23] 23.The apparatus of Claim 22, wherein:
the first, second, third and fourth coils are each configured to be operational independent of each other.
- [c24] 24.The apparatus of Claim 23, further comprising:
a fifth, a sixth and a seventh coil, each having axes arranged substantially perpendicular to the axes of the first, second, third and fourth coils;
wherein the fifth coil is disposed superior to the first region, the sixth coil is disposed inferior to the first and second regions, and the seventh coil is disposed superior to the second region;
the fifth and sixth coils are each disposed underlapped with respect to the first and third coils; and
the sixth and seventh coils are each disposed underlapped with respect to the second and fourth coils.
- [c25] 25.An apparatus for bilateral imaging of a first and a second breast of the same person, the apparatus comprising:
a first set of coils with each coil of the first set of coils being underlapped with respect to each other coil of the first set of coils;
a second set of coils with each coil of the second set of coils being underlapped with respect to each other coil of the second set of coils; and
the second set of coils opposing the first set of coils,

defining therebetween a first region and a second region for receiving the first and the second breast; wherein each coil in the first and the second sets of coils are configured to be operational independent of each of the aforementioned coils.

[c26] 26. The apparatus of Claim 25, further comprising: an open region between the first and second sets of coils to allow access therebetween to the first and second regions.